



## MPE Calculation

|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Applicant:            | Hangzhou Tuya Information Technology Co.,Ltd                                |
| Address:              | Room 301,Building 1,Huace Center,Xihu District,<br>Hangzhou,Zhejiang, China |
| FCC ID:               | 2ANDL-T1-U-HL                                                               |
| Product:              | Wi-Fi and Bluetooth Module                                                  |
| Model No.:            | T1-U-HL                                                                     |
| Reference RF report # | 709502401316-00A, 709502401316-00B                                          |

According to subpart 15.247(i) and subpart §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

| (B) Limits for General Population/Uncontrolled Exposure |                               |                               |                                     |                          |
|---------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Frequency Range (MHz)                                   | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Averaging Time (minutes) |
| 0.3–1.34                                                | 614                           | 1.63                          | *(100)                              | 30                       |
| 1.34–30                                                 | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | 30                       |
| 30–300                                                  | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| 300–1,500                                               | /                             | /                             | f/1500                              | 30                       |
| 1,500–100,000                                           | /                             | /                             | 1.0                                 | 30                       |

f = frequency in MHz; \* = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4 \pi R^2$  = power density (in appropriate units, e.g. mW/cm<sup>2</sup>);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

## Calculated Data for Wi-Fi

|                                                                                          |        |
|------------------------------------------------------------------------------------------|--------|
| Maximum peak output power at antenna input terminal (dBm):                               | 23.20  |
| Maximum peak output power at antenna input terminal (mW):                                | 208.93 |
| Prediction distance (cm):                                                                | 20     |
| Antenna Gain, typical (dBi):                                                             | -0.23  |
| Maximum Antenna Gain (numeric):                                                          | 0.9484 |
| The worst case is power density at predication frequency at 20 cm (mW/cm <sup>2</sup> ): | 0.0394 |
| MPE limit for general population exposure at prediction frequency (mW/cm <sup>2</sup> ): | 1.0    |

The max power density  $0.0394 \text{ (mW/cm}^2\text{)} < 1 \text{ (mW/cm}^2\text{)}$

Result: Compliant

## Calculated Data for BLE

|                                                                                          |        |
|------------------------------------------------------------------------------------------|--------|
| Maximum peak output power at antenna input terminal (dBm):                               | 7.93   |
| Maximum peak output power at antenna input terminal (mW):                                | 6.21   |
| Prediction distance (cm):                                                                | 20     |
| Antenna Gain, typical (dBi):                                                             | -0.23  |
| Maximum Antenna Gain (numeric):                                                          | 0.9484 |
| The worst case is power density at predication frequency at 20 cm (mW/cm <sup>2</sup> ): | 0.0012 |
| MPE limit for general population exposure at prediction frequency (mW/cm <sup>2</sup> ): | 1.0    |

The max power density  $0.0012 \text{ (mW/cm}^2\text{)} < 1 \text{ (mW/cm}^2\text{)}$

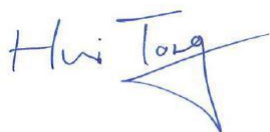
Result: Compliant

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

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